

What is claimed is:

1. A multi-mode wireless communication device, comprising:

a host baseband processor configured to operate in accordance with a first wireless communications protocol of a first wireless communications system;

5 a baseband co-processor configured to operate in accordance with a second wireless communications protocol of a second wireless communications system; and

means for establishing, within said device, timing synchronization between said first and second wireless communications systems on the basis of timing information transferred to said host baseband processor from said baseband co-processor.

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2. The multi-mode communications device of claim 1 wherein said means for establishing timing synchronization includes means for issuing, from said host baseband processor, a timer capture interrupt to said baseband co-processor during a predetermined timer phase of said first wireless communications system.

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3. The multi-mode communication device of claim 2 wherein said baseband co-processor is configured to provide at least one timer value pertinent to a timing state of said second wireless communications system to said host baseband processor in response to issuance of said timer capture interrupt, said means for synchronizing determining a timing difference between said first and second wireless communication systems based upon said predetermined timer phase and said at least one timer value.

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4. The multi-mode communications device of claim 1 wherein said means for establishing timing synchronization includes means for reading a current value of at least one timer maintained by said baseband co-processor consistent with said second wireless communications protocol.

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5. The multi-mode communications device of claim 1 wherein said host baseband processor further includes a higher-layer processing module and a modem for interfacing with said first wireless communication system, said higher-layer processing module being operatively coupled to said modem and to a baseband interface of said baseband co-processor.
6. The multi-mode communications device of claim 3 wherein said second wireless communications protocol comprises WCDMA, said baseband co-processor including first and second registers adapted to store said at least one timer value and an additional timer value pertinent to said second wireless communications protocol.
7. The multi-mode communications device of claim 6 wherein said at least one timer value corresponds to a slot counter and said additional timer value corresponds to a sample counter.
8. The multi-mode communications device of claim 1 wherein said host baseband processor includes a higher-layer processor configured to effect higher-layer processing of information processed by said baseband co-processor.
9. A timing synchronization method, comprising:
- configuring a host baseband processor of a multi-mode device to operate in accordance with a first wireless communications protocol of a first wireless communications system;
  - configuring a baseband co-processor of a multi-mode device to operate in accordance with a second wireless communications protocol of a second wireless communications system;
  - establishing, within said device, timing synchronization between said first and second communication systems on the basis of timing information transferred to said host baseband processor from said baseband co-processor.

10. The method of claim 9 wherein said establishing includes issuing a timer capture interrupt to said baseband co-processor.
11. The method of claim 10 wherein said establishing further includes providing at  
5 least one timer value pertinent to a timing state of said second wireless communications system to said host baseband processor in response to issuance of said timer capture interrupt.
12. The method of claim 9 wherein said establishing includes reading a current value  
10 of at least one timer maintained by said baseband co-processor consistent with said second wireless communications protocol.
13. The method of claim 11 wherein said second wireless communications protocol comprises WCDMA, said establishing including storing at least one timer value and an  
15 additional timer value pertinent to an additional timing state of said second wireless communications system in first and second registers of said baseband co-processor.
14. The method of claim 9 wherein said host baseband processor is further configured to effect higher-layer processing of information processed by said baseband co-processor.  
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15. A method for establishing timing synchronization between a first wireless communication system and a second wireless communication system within a multi-mode communication device, the method comprising:
- generating a timer capture interrupt during a predetermined timing phase of said  
25 first wireless communication system;
- storing a timer value of at least one timer pertinent to operation of said second wireless communication system in response to said timer capture interrupt;
- reading said timer value; and
- determining a timing relationship between said first and second wireless  
30 communication systems based upon said timer value.

16. The method of claim 15 further including:  
storing an additional timer value of at least one other timer pertinent to operation  
of said second wireless communication system in response to said timer capture interrupt;  
reading said additional timer value, said timing relationship being based at least in  
5 part upon said additional timer value.
17. The method of claim 15 wherein one or more timers are incremented pursuant to  
operation of said first wireless communication system, said determining a timing  
relationship including comparing at least one value of said one or more timers with said  
10 timer value.
18. The method of claim 15 wherein said first wireless communications system  
operates in accordance with a first wireless communications protocol and said second  
wireless communications system operates in accordance with a second wireless  
15 communications protocol different from said first wireless communications protocol.
19. The method of claim 18 wherein said first wireless communications protocol  
comprises GSM and said second wireless communications protocol comprises WCDMA.

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